UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,069	09/09/2003	Eugene P. Marsh	M4065.0453/P453-B	9190

24998 7590 09/19/2005

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street, NW
Washington, DC 20037

EXAMINER	
LEWIS, MONICA	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/657,069	MARSH ET AL.	
	Examiner	Art Unit	
	Monica Lewis	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *55 and 56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *55 and 56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed June 28, 2005.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 55 and 56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant amended (1/4/05) the claims as follows: a) "substantially pure metallic" (See Claims 55 and 56). However, the specification discloses "pure metallic" (For Example: See Paragraph 32).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 55 and 56 are rejected under 35 U.S.C. 102(a) as being anticipated by Soininen et al. (U.S. Patent No. 6,482,740).

In regards to claim 55, Soininen et al. ("Soininen") discloses the following:

a) a first electrode (36) and a second electrode (40) (For Example: See Figure 2);

b) a dielectric (38) provided between said first electrode and said second electrode (For Example: See Figure 2); and

c) at least one of said first and second electrode comprising a continuous ALD deposited rhodium film with a substantially pure metallic rhodium composition (For Example: See Figure 2 and Column 5 Lines 5-15) (Note: Substantially is being given the broadest reasonable interpretation. Applicant states that the term rhodium is intended to include not only elemental rhodium, but rhodium with other trace metals or in various alloyed combinations with other metals...as long as such rhodium alloy is conductive (See Specification Paragraph 16). The prior art discloses that the conductive thin film can comprise one or more of the following films: a) rhenium, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver and gold. Therefore, the prior art discloses "substantially pure metallic rhodium." Finally, the claim recites an ALD deposited rhodium film. In the apparatus of Soininen the metal film is formed by first depositing a metal oxide film by an ALD process and then converting the metal oxide into elemental metal, hence, the metal film of Soininen is formed using an ALD deposition step, therefore, the metal film of Soininen can be considered an "ALD deposited" film.).

Finally, the following limitation makes it a product by process claim: a) "a continuous ALD deposited." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in

"product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 56, Soininen discloses the following:

a) a first electrode and a second electrode (For Example: See Figure 2);

b) a dielectric provided between said first electrode and said second electrode (For Example: See Figure 2); and

c) at least one of said first and second electrode comprising a substantially pure metallic rhodium layer formed by atomic layer deposition at a temperature of about 100°C to about 200°C (For Example: See Column 5 Lines 5-15 and Column 12 Lines 36-40) (Note: Substantially is being given the broadest reasonable interpretation. Applicant states that the term rhodium is intended to include not only elemental rhodium, but rhodium with other trace metals or in various alloyed combinations with other metals...as long as such rhodium alloy is conductive (See Specification Paragraph 16). The prior art discloses that the conductive thin film can comprise one or more of the following films: a) rhenium, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver and gold. Therefore, the prior art discloses "substantially pure metallic rhodium." Finally, the claim recites an ALD deposited rhodium film. In the apparatus of Soininen the metal film is formed by first depositing a metal oxide film by an ALD process and then converting the metal oxide into elemental metal, hence, the metal film of Soininen is formed using an ALD deposition step, therefore, the metal film of Soininen can be considered an "ALD deposited" film.).

Additionally, the following limitation makes it a product by process claim: a) "formed by rhodium atomic layer deposition of dicarbonyl at a temperature of about 100°C to about 200°C." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Finally, the applicant has not established the critical nature of the "temperature of about 100°C to about 200°C." "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have various ranges.

Response to Arguments

6. Applicant's arguments filed 6/28/05 have been fully considered but they are not persuasive. Applicant argues that Soininen fails to disclose "at least one of said first and second capacitor electrode comprising a continuous ALD deposited rhodium film with substantially pure metallic rhodium composition" and "substantially pure metallic rhodium formed by rhodium atomic layer deposition of dicarbonyl cyclopentadienyl rhodium at a temperature of about 100°C to about 200°C." However, Soininen discloses a first electrode (36) and a second electrode (40)

and at least one of said first and second electrode comprising rhodium film (For Example: See Figure 2 and Column 5 Lines 5-15). "A continuous ALD deposited rhodium film" and "a substantially pure metallic rhodium layer formed by rhodium atomic layer deposition of dicarbonyl cyclopentadienyl rhodium at a temperature of about 100°C to about 200°C" **are product by process limitations**. "Applicants reaffirm that the limitation...is not a product-by-process limitation, but rather a resulting structure having distinct and defined characteristics." However, **the limitations are not a resulting structure having distinct and defined characteristics**. The Applicant has made a general statement without pointing out and providing evidence as to how the structure has "distinct and defined characteristics." The structures are the same because they both have a rhodium layer (For Example: See Figure 2 and Column 5 Lines 5-15). The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, **determination of patentability is based upon the product itself**. The patentability of a product **does not depend on its method of production**. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is **directed to the product per se, no matter how actually made**, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether

claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. See In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the **burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product**. See In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). **Arguments are not evidence**. Evidence (ex: declarations, affidavits or etc.) tends to prove or disprove the existence of an alleged fact (See Black's Dictionary).

Finally, Applicant argues that "although the specification indicates along with the (CO_2) groups, the carbon from the deposited saturated organo-rhodium monolayer is removed and a pure metallic rhodium layer forms on a surface of the substrate 20...Accordingly the limitation substantially pure metallic is disclosed in the specification." However, "substantially pure metallic" is not defined in the specification. Therefore, it is not limited to carbon and could encompass alloying metals. Additionally, the specification does not state that a "substantially pure metallic" is resulting instead it states that a "pure metallic" results (For Example: See Paragraph 32). The specification does not state that only a portion of the carbon is removed it states "carbon contamination is greatly reduced as **carbon is removed** with the use of oxygen" (For Example: See Paragraph 32).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

ML
September 12, 2005

AMIR ZARABIAN
ASSOCIATE PATENT EXAMINER
TECHNOLOGY CENTER